

REMARKS

As a preliminary, Applicant and Applicant's representative thank the Examiner for the interview of September 9, 2010. Applicant's summary record of the interview is incorporated into the amendment and accompanying remarks.

By the present amendment, claims 1 and 9 have been amended to recite that the engine is controlled in the second regeneration operating mode (implementing sequences in which engine operation alternates between stages of rich mixture operation and of lean mixture operation) as long as conditions are below the threshold values including the temperature threshold value, to raise the temperature level in the vehicle exhaust line as long as the temperature is under the temperature threshold value.

Support for the added recitations is found in the original application, for example, at least page 4, lines 11, 20-21 and 27-29 and page 6, lines 22-27.

Claims 1-6, 8-13, and 15-22 are pending in the present application. Claims 1 and 9 are the only independent claims.

Art rejections

In the Office Action, claims 1, 3-4, 6-12, 14, 16-18, and 21-22 are rejected under 35 U.S.C. 103(a) as obvious over US 6,490,857 to Sasaki ("Sasaki") in view of US. 6,751,949 to Tamura et al. ("Tamura").

Further, claims 5 and 13 are rejected under 35 U.S.C. 103(a) as obvious over Sasaki and Tamura in view of US 4,655,037 to Rao ("Rao").

Claims 19-20 are rejected under 35 U.S.C. 103(a) as obvious over Sasaki and Tamura in view of an alleged “design choice.”

Reconsideration and withdrawal of the rejections is respectfully requested.

As discussed at the interview, Figs. 26-28 of Sasaki and the corresponding description from col. 23, line 62 to col. 24, line 5, describe an intermediate mode in zone B2 (rich mode) of Fig. 6B in which excessive temperature is avoided by shifting the air-fuel ratio to lean to avoid excessive increase in the temperature above ceiling temperature T2. However, as long as the temperature remains below or in the vicinity of T1, Sasaki maintains a rich mode. Thus, the alternating richer and leaner sequences shown in Figs. 28 of Sasaki are used only in the particular situation where performing the “regular” rich mode regeneration defined for zone B2 leads to an excessive increase of the temperature. As long as the temperature remains below or in the vicinity of T1, Sasaki does not provide alternating rich and lean sequences.

In contrast, in the presently claimed invention, as recited in present claims 1 and 9, the engine is controlled in the second regeneration operating mode (implementing sequences in which engine operation alternates between stages of rich mixture operation and of lean mixture operation) as long as conditions are below the threshold values including the temperature threshold value, to raise the temperature level in the vehicle exhaust line as long as the temperature is under the temperature threshold value.

As discussed at the interview, an advantage of the presently claimed invention is that the alternating rich/lean modes can be used to improve the temperature-increasing effect and the fuel economy of the temperature increase, i.e., as long as the temperature is below the operating

threshold value (for example, by improving combustion during each rich mode segment due to oxygen storage during the preceding lean mode segment). This is particularly helpful, for example, to assist regeneration by more quickly and efficiently raising temperature as soon as regeneration starts in unfavourable operating conditions.

Sasaki relies on continuous rich mode until threshold temperatures are reached, so Sasaki does not provide any motivation or incentive to arrive at the presently claimed invention. Further, the other references fail to remedy the deficiencies of Sasaki. Therefore, the present claims are not obvious over the cited references taken alone or in any

Further, with respect to the dependent claims, it is submitted that Sasaki fails to teach or suggest the combined features of each of these claims. Further, the other cited reference fails to remedy the deficiencies of Sasaki. Therefore, each of the respective dependent claims is not obvious over the cited references taken alone or in any combination.

In view of the above, it is submitted that the rejections should be withdrawn.

Conclusion

In the event there is, in the Examiner's opinion, any outstanding issue and such issue may be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of the response period. Please charge the fee for such extension and any other fees which may be required to our Deposit Account No. 502759.

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Respectfully submitted,

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